APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,278	07/22/2003	C. James MacLennan	MS1-3547US	7469

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EXAMINER
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ART UNIT	PAPER NUMBER
2161	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

		Application No.	Applicant(s)
Office Action Summary		10/624,278	MACLENNAN ET AL.
		Examiner	Art Unit
		Charles E. Lu	2161

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>12 October 2007</u>.

2a)☐ This action is **FINAL.** 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-35</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-35</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1. This Action is in response to the Request for Continued Examination dated 10/12/2007. Claims 1-35 are pending and rejected.

Response to Amendment/ Response to Arguments

2. Remarks concerning the claim objection have been noted. The claim objection is maintained because the data sets are not connected to the processing unit and/or the system memory. Due to amendment, new claim objections are presented. See below.

3. Remarks concerning the 35 USC 112 rejections have been noted. The 35 USC 112 rejections are withdrawn.

4. Applicant's arguments are drawn to the claims as amended and were fully considered, but are moot in view of the new grounds of rejection presented below.

Claim Objections

5. **Claims 1-35 are objected to because of the following informalities:**

As to claims 1, 10, 19, and 25, "the subset of data" in the "process" step should be rewritten for proper antecedent basis. Also, "the requested values" in the "query" step should be rewritten for proper antecedent basis.

As to claim 30, the components should be interconnected. The data sets should be connected to a component such as the processing unit or the system memory.

Dependent claims do not cure the deficiencies of the independent claims.

Appropriate corrections are required. The claims have been given their broadest

reasonable interpretation.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

6. **Claims 1, 3-10, 12-19, 21-30, and 32-35 are rejected under 35 U.S.C.**

103(a) as being unpatentable over Becker (U.S. Patent 6,301,579), hereinafter

"Becker."

As to claim 1, Becker teaches the following claimed subject matter:

Accessing one or more of a plurality of data sets, each data set storing data as

cases (e.g., mushrooms, census, col. 10, ll. 30, 67, fig. 18A-B, col. 28), each case

comprising a value in one or more of a plurality of variables, wherein the values

represent characteristics of a subject of the case and each type of the plurality of

variables corresponds to pre-determined data types (see above, fig. 18A-B, col. 28).

Retrieving data from a data set of the plurality of data sets (col. 10, ll. 29-44);

Performing operations on a chosen one or more of a plurality of mining structures

(e.g., for adult census, mushrooms, also see col. 10-13 and fig. 18A and col. 28), the

operations comprising:

Create, wherein the create operation sets up mining structures by creating one or

more mining structures using data retrieved from the data set (see fig. 17), wherein

each mining structure describes how the data will be modeled for data mining, the creating comprising:

Defining one or more of a plurality of mining structure variables as the variables from the data structure that will be used in the mining structure (col. 10, l. 44 – col. 11, l. 40).

Defining one or more of a plurality of acts of processing to be performed on the retrieved data, wherein the one or more acts may be performed on a subset of the retrieved data (see above and col. 29, ll. 16-48).

Process, wherein the process operation performs initial processing on the retrieved data from the data set for mining model creation by performing processing on the retrieved data, wherein processing occurs only on the subset of data determined necessary per the definitions in the mining structure (see above, building a base level of records, col. 11, l. 48);

Clear, wherein the clear operation removes data from a processed mining structure (fig. 18A, col. 28, ll. 15-20);

Drop, wherein the drop operation deletes each chosen mining structure (see above, fig. 18A, "Remove Column" also clears data and deletes each chosen mining structure when, for example, all columns are removed).

Update, wherein the update operation causes the mining structure to be reprocessed from the data set (fig. 18A, col. 28, ll. 1-15). Note that the mining structure must be reprocessed from the data set so that the structure contains the correct added/removed columns and/or filtered data.

Query, wherein the query operation returns the requested values from the mining structure (e.g., col. 22, l. 54). Note also that a query operation must be performed of lower level data (e.g., data file) to obtain data to create a higher level table in tables 1-3);

Storing results of operations performed on the data in the mining structure (see above, note that the results must be stored to build upper levels of a decision table classifier).

Ascertaining the existence of one or more mining structures (data files or training sets) available for mining model creation (this must happen in order to create a decision table classifier from the data file, see col. 11, ll. 46-50).

Based on the mining structures, creating a plurality of mining models (e.g., upper levels of decision table classifier), wherein each mining model is predictive of chosen characteristics based on the values obtained from mining structure variables (see col. 10-12) and the plurality of mining models includes a first mining model created from a first mining structure of the plurality of mining structures (one level of hierarchy of table 1-3 created from the base table for mushrooms) and a second mining model, different from the first mining model, created from the first mining structure (another different level of hierarchy of table 1-3 created from the base table for mushrooms, see section starting at col. 11, l. 41).

Providing results of the creation of the one or more mining models (table 1-3, see "iv. Example Visualization of a Decision Table Classifier," col. 15, l. 53).

Becker does not expressly teach a "key value."

However, Becker suggests for a data set, "a key value which uniquely identifies the corresponding case" (col. 33, II. 18-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Becker, such that the data set is organized in record format with a key (uniquely identifying the record) and a value in one or more variables, since one of ordinary skill in the art would have been motivated to facilitate data organization for a data set. ·

As to claims 3-5, Becker as applied above teaches when two mining structures created from the same data set are not equal with respect to their cases, and mining structure variables. See fig. 18A and various data manipulation tools available to create a different mining structure from the same data set (col. 28, II. 1-30).

As to claim 6, Becker as applied above further teaches wherein links between the one or more of a plurality of mining models and the mining structure from which each mining model was created are stored, facilitating changes in one or more mining structures being simultaneously reflected in each of the one of more mining models created from each of the changed mining structures. Note that "a structure can be built from a small training set and then be back-fitted with a larger data set to improve the probability estimates" (col. 29, II. 53-55). In order to accomplish this, a link between model and structure must be stored to remember the correspondence between the mining model and mining structure and to update the values correctly.

As to claim 7, Becker as applied above further teaches evaluating two or more mining structures created using data from the same data set by comparing to each

other at least one mining model created from each of the two or more mining structures,

and providing the results of the comparison (col. 29, II. 13-47). Note that in, e.g.,

holdout, an induced classifier, created from two thirds of the data, is compared with

classified data, occurring from the remaining one-third of the same data. This is

performed to determine the accuracy of the classifier. Thus, two or more underlying

mining structures are evaluated as claimed.

As to claim 8, Becker as applied above further teaches providing two or more

mining models created from the same mining structure for comparison (see above, col.

13, II. 1-63, col. 7, II. 60-65).

As to claim 9, Becker as applied above further teaches accepting a drill through

query for specified data and providing said specified data (col. 9, II. 49-53).

Claims 10, 12-18, 30 and 32-35 are rejected on the same basis as claims 1 and

3-9 discussed above.

Claim 19 is drawn to substantially the same subject matter as claim 1 discussed

above, in addition to "wherein when a mining model creation function detects that no

mining structure utilizing data from a desired data set is currently available, creating one

or more mining models includes creating the mining structure." Becker as applied

above also teaches this feature, because on the first creation of a data file from a data

set, no data file is yet created from a data set, and thus, a user will detect that no mining

structure is currently available, and he will create the mining structure and models (see

fig. 18A). Note that a user is the "mining model creation function." This claim is also

treated in another 103 rejection below, while interpreting the "function" as a

programmed function.

Claim 25 is rejected on the same basis as claim 19, discussed above.

Claims 21-24 and 26-29 are rejected on the same basis as claims 3-6,

discussed above.

7. **Claims 2, 11, 20, and 31 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Becker in view of Smith et al (U.S. Patent 6,591,274),

hereinafter "Smith."

As to claim 2, Becker as applied above teaches mining structures, but does not

expressly teach "serving as first class objects in a database."

However, Smith teaches serving as first class objects in a database (col. 4, ll. 5-

45).

Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify Becker, such that the mining structures serve as

first class objects in a database. The motivation would have been to facilitate accessing

data from a data store, as taught by Smith (col. 1, l. 48 – col. 2, l. 20).

Claims 11, 20, and 31 are drawn to substantially the same subject matter as

claim 2 discussed above.

8. **Claims 19 and 21-29 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Becker in view of Browning et al (U.S. Patent 5,903,302),

hereinafter "Browning."

Claim 19 is drawn to substantially the same subject matter as claim 1 discussed above, in addition to "wherein when a mining model creation function detects that no mining structure utilizing data from a desired data set is currently available, creating one or more mining models includes creating the mining structure." This limitation is understood as being similar to "if a necessary file is missing, create the file before continuing processing."

If the "function" is a programmed function, then Becker does not expressly teach the claimed subject matter.

However, Becker as applied above teaches that a mining model is created using a mining structure (see above). The mining structure is, for example, a data file that serves as a base level of records for the mining model (col. 11, ll. 46-50). Thus, the mining model could depend on whether the data file was created, and if the data file cannot be found, a mining model could not be created.

Browning teaches a function that detects a missing file, and if, for whatever reason, a file cannot be found, automatically recreating the file (col. 5, ll. 28-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Becker, such that a detection function of Browning would detect if the data file of Becker is missing, and if the file is missing, the file will be recreated. As such, Becker could continue processing the mining model (see above). This feature would meet the claimed limitations. The motivation would have been to facilitate smooth operation of the system (it is undesirable to act on a file that

does not exist) and to ensure that the system possesses all the data necessary for successful operation, as known to one of ordinary skill in the art.

Claim 25 is rejected on the same basis as claim 19, discussed above.

Claims 21-24 and 26-29 are rejected on the same basis as claims 3-6, discussed above.

9. **Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Becker in view of Browning, further in view of Smith.**

As to claim 20, Becker and Browning as applied above teach mining structures, but do not expressly teach "serving as first class objects in a database."

However, Smith teaches serving as first class objects in a database (col. 4, ll. 5-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Becker and Browning, such that the mining structures serve as first class objects in a database. The motivation would have been to facilitate accessing data from a data store, as taught by Smith (col. 1, l. 48 – col. 2, l. 20).
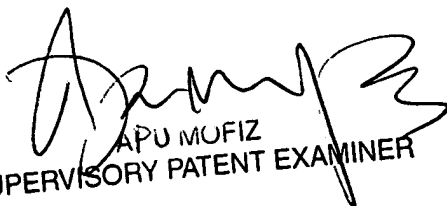
Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles E. Lu whose telephone number is (571) 272-8594. The examiner can normally be reached on 8:30 - 5:00; M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Apu Mofiz can be reached at (571) 272-4080. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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